

REMARKS

Claims 1-7 and 23-27, 32, 33 and 34 are currently pending in the subject application and are presently under consideration. Claims 1, 2, 3, 5, 6, 7, 23, 24, 25, 26 and 32 have been amended as shown on pages 2-5 of the Reply. Previously presented claims 28-31 are withdrawn. Since the features presented in an earlier withdrawn claim 34 have been included into claim 1, claim 34 is again presented for consideration. A version of the claims is found at pages 2-5. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 7, 23 and 25 Under 35 U.S.C §112

Claims 7, 23 and 25 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is respectfully requested that this rejection be withdrawn for at least the following reasons.

The independent claim 7 has been suitably amended to recite *means for inducing heat into a portion of a semiconductor body of the integrated circuit utilizing a plurality of thermo-electric structures; or /and means for dissipating heat away from a portion of a semiconductor body of the integrated circuit utilizing a plurality of thermo-electric structures*. Regarding claims 23 and 25, it is submitted that neither of the claims recites “the region of the semiconductor body” as stated on page 3 of the Final Office Action dated May 10, 2006. However, the claims have been amended to recite “the integrated circuit semiconductor body.” In view of at least the aforementioned, it is respectfully requested that this rejection be withdrawn.

II. Rejection of Claims 1-7, 23, 25-26 and 32-33 Under 35 U.S.C. §102(b)

Claims 1-7, 23, 25-26 and 32-33 stand rejected under 35 U.S.C. §102(b) as being anticipated by Levinson *et al.* (US 6,098,408). Applicants’ representative respectfully requests that this rejection be withdrawn for at least the following reasons. Levinson *et al.* fails to describe each and every feature set forth in the subject claims.

A single prior art reference anticipates a patent claim only if it *expressly or inherently describes each and every limitation* set forth in the patent claim. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). *The identical invention must be shown in as complete detail as is contained in the ... claim.* *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The subject invention is directed to a system for removing generated heat from hot spot areas and/or inducing heat at other area of the semiconductor chip to facilitate providing for a uniform temperature gradient across a semiconductor body. To this end, independent claim 1 recites *a plurality of thermo-electrical structures that create a uniform temperature gradient across a semiconductor body via heat inducement to and/or dissipation of generated heat away from a portion of the integrated circuit semiconductor body.* Levinson *et al.* fails to disclose or suggest such novel aspects of the subject claims.

Levinson *et al.* relates to a system for *maintaining suitable reticle temperature* in extreme ultraviolet (EUV) lithography. Accordingly, Levinson *et al.* teaches a system employs a plurality of thermoelectric coolers mounted on an opposite side of a back plate of a chuck assembly such that each thermoelectric cooler is responsible for cooling a particular portion of the reticle chuck. In contrast, the claimed invention relates to varying and monitoring the rate of change in temperature at each location. A *uniform temperature gradient* may be employed to remove heat from hotspot areas effectively by facilitating determining the rate of change in temperature between successive locations. This can typically reduce accumulation and concentration of stress that adversely affects the semiconductor performance. Therefore, Levinson *et al.* does not disclose or suggest the claimed features of the subject invention wherein a plurality of thermo-electrical structures are employed for *maintaining a uniform temperature gradient* in the semiconductor body. Accordingly, this rejection with respect to independent claims 1, 7 and the claims that depend there from should be withdrawn.

III. Rejection of Claims 1-7 Under 35 U.S.C. §102(e)

Claims 1-7 stand rejected under 35 U.S.C. §102(e) as being anticipated by Ghoshal (U.S. 6,588,217). Applicants' representative respectfully requests that this rejection be withdrawn for at least the following reasons. Ghoshal fails to disclose, teach or suggest all features of the claimed invention.

As stated *supra*, independent claims 1 and 7 recite similar limitations namely: *a plurality of thermo-electrical structures that create a uniform temperature gradient across a semiconductor body via heat inducement to and/or dissipation of generated heat away from a portion of the integrated circuit semiconductor body*. Ghoshal does not teach or suggest such novel features. Ghoshal relates to an apparatus for cooling selected elements within an integrated circuit. Heat is removed from the integrated circuit (IC) component through the cold plate and transmitted to the hot plate through the thermo electric cooler. The hot plate is located at a surface such that heat transmitted to it from the IC component is dissipated into the atmosphere surrounding the IC chip (See Ghoshal col. 1 lines 54-67). Therefore, it can be concluded that Ghoshal does not disclose or suggest *a plurality of thermo-electrical structures that create a uniform temperature gradient across a semiconductor body via heat inducement to and/or dissipation of generated heat away from a portion of the integrated circuit semiconductor body*, as claimed. In view of at least the aforementioned, withdrawal of this rejection is requested with respect to independent claims 1 and 7 and all the claims that depend there from.

IV. Rejection of Claim 24 Under 35 U.S.C. §103(a)

Claim 24 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Levinson *et al.* in view of Cannell *et al.* (US 6,729,383). Withdrawal of this rejection is requested for at least the following reasons. The cited references, either alone or in combination, fail to teach or suggest all limitations of the subject claims.

As stated *supra*, the invention as claimed provides for maintaining uniform temperature gradient of an integrated circuit by employing a heat regulation device with a thermal structure network assembly. Cannell *et al.* relates to methods and apparatuses for cooling electronic components and other objects. However, Cannell *et al.* does not make

up for the aforementioned deficiencies of Levinson *et al.* with respect to independent claim 1 from which the subject claim depends. In particular, Cannell *et al.* does not teach *a plurality of thermo-electrical structures that create a uniform temperature gradient across a semiconductor body via heat inducement to and/or dissipation of generated heat away from a portion of the integrated circuit semiconductor body*. Therefore, the subject invention as recited in claim 24 is not obvious over a combination of Levinson *et al.* and Cannell *et al.* Hence, this rejection should be withdrawn.

V. Rejection of Claim 27 Under 35 U.S.C. §103(a)

Claim 27 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Levinson, et al. in view of Ghoshal. Withdrawal of this rejection is requested for at least the following reasons. The cited references, either alone or in combination, fail to teach or suggest all limitations of the subject claims.

As stated *supra*, the claimed subject matter relates to a heat regulating device that reduces accumulation and concentration of stress by maintaining a uniform temperature gradient. This achieved by least one of heat dissipation and/or heat induction *via* a plurality of thermo-electrical structures. Claim 27 depends directly from independent claim 1. However, neither Ghoshal nor Levinson *et al.* teach or suggest *a plurality of thermo-electrical structures that create a uniform temperature gradient across a semiconductor body via heat inducement to and/or dissipation of generated heat away from a portion of the integrated circuit semiconductor body*, as recited in independent claim 1. Therefore, the subject invention as recited in claim 27 is not obvious over a combination of Levinson *et al.* and Ghoshal. Accordingly, this rejection should be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [AMDP812US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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